

Cyanovirin- N

Drug Class: Microbicides

Drug Description

Cyanovirin-N (CV-N) is a protein from the cyanobacterium *Nostoc ellipsosporum* (blue-green algae). The protein exists as either a quasi-symmetric two-domain monomer or a domain-swapped dimer. [1]

HIV/AIDS-Related Uses

CV-N is an HIV fusion inhibitor with activity against both HIV-1 and HIV-2 in vitro and in animal models. It is in preclinical development as a microbicide for the prevention of sexual transmission of HIV.[2] [3]

Non-HIV/AIDS-Related Uses

CV-N has potent in vitro activity against almost all strains of influenza A and B virus. CV-N is moderately active in vitro against some herpes viruses and is potentially active against hepatitis C virus.[4]

In vitro and in mouse models, CV-N was active against the Zaire strain of the Ebola virus.[5]

Pharmacology

CV-N binds to certain high-mannose oligosaccharides (oligomannose-8 and oligomannose-9) on viral surface envelope glycoprotein gp120, blocking its interaction with cellular receptors. This unique and effectively irreversible interaction renders gp120 incapable of mediating virus-to-cell or cell-to-cell fusion.[6] [7]

CV-N's anti-HIV effects are expressed during the initial binding or fusion process. These effects may occur after the initial virus-to-cell attachment phase, but prior to the completion of viral entry and replication.[8]

Clinical Trials

For information on clinical trials that involve Cyanovirin-N, visit the ClinicalTrials.gov web site at <http://www.clinicaltrials.gov>. In the Search box, enter: Cyanovirin-N AND HIV Infections.

Dosing Information

Mode of Delivery: Intravaginal.[9]

Dosage Form: Topical gel. Preclinical studies are evaluating 0.5%, 1%, and 2% preparations in aqueous gel with hydroxyethyl cellulose.[10] [11]

Chemistry

CAS Number: 184539-38-6[12]

Molecular weight: 11 kDa[13]

Other Names

CV-N Protein[14]

CV-N[15]

Further Reading

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Giomarelli B, Provvedi R, Meacci F, Maggi T, Medaglini D, Pozzi G, Mori T, McMahon JB, Gardella R, Boyd MR. The microbicide cyanovirin-N expressed on the surface of commensal bacterium *Streptococcus gordonii* captures HIV-1. *AIDS.* 2002 Jul 5;16(10):1351-6. PMID: 12131211

Tsai CC, Emau P, Jiang Y, Agy MB, Shattock RJ, Schmidt A, Morton WR, Gustafson KR, Boyd MR. Cyanovirin-N inhibits AIDS virus infections in vaginal transmission models. *AIDS Res Hum Retroviruses.* 2004 Jan;20(1):11-18. PMID: 15000694

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Further Reading (cont.)

Tziveleka LA, Vagias C, Roussis V. Natural products with anti-HIV activity from marine organisms. *Curr Top Med Chem.* 2003;3(13):1512-35. PMID: 14529524

Manufacturer Information

Cyanovirin-N
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For More Information

Contact your doctor or an AIDSinfo Health Information Specialist:

- Via Phone: 1-800-448-0440 Monday - Friday, 12:00 p.m. (Noon) - 5:00 p.m. ET
- Via Live Help: http://aidsinfo.nih.gov/live_help Monday - Friday, 12:00 p.m. (Noon) - 4:00 p.m. ET

References

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4. Antimicrob Agents Chemother - 2003 Aug;47(8):2518-25
5. Antiviral Res - 2003 Mar;58(1):47-56
6. Antimicrob Agents Chemother - 2003 Aug;47(8):2518-25
7. Peptide - 2004;25(4):551-61
8. Antimicrob Agents Chemother - 1997 Jul;41(7):1521-30
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